microCELL™ TLS

HIGH-THROUGHPUT LASER SYSTEM FOR CUTTING OF HALF-CELLS

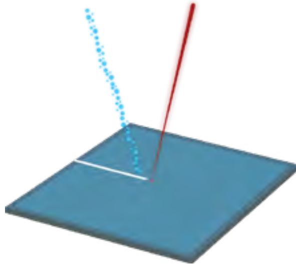
3D-Micromac's microCELL™ TLS is a highly productive laser system for the separation of silicon solar cells into half-cells. The microCELL™ TLS meets module manufacturers' demands by retaining the mechanical strength of the cut cells for improved module reliability and less power degradation over the whole module lifetime. The ablation free cleaving process guarantees an outstanding edge quality. Laser processing on-the-fly and an innovative handling concept enable maximum throughput and yield in the full-scale manufacturing of crystalline half-cells and shingled-cells.

HIGHLIGHTS

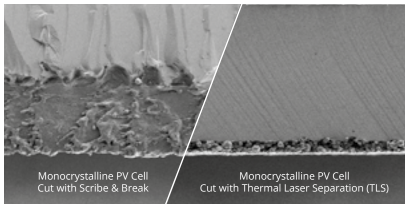
- On-the-fly laser processing with unbeatable cost-benefit ratio
- One-pass contactless dicing process
- High throughput: up to 6,000 wph
- Low cost of ownership and CAPEX
- Available as stand-alone or inline system for integration into module line

3D MICROMAC

BENEFITS OF THE TLS™-TECHNOLOGY



TLS™ is a cleaving process that relies on laser-based heating and subsequent cooling



Comparison of edge quality of scribe-and-break-approaches (left) and TLS™ (right)

3D-Micromac is taking advantage of the Thermal Laser Separation™ (TLS) technology, especially for use cases within the photovoltaic production. The patented process has gained importance in contrast to conventional separation techniques due to smooth and defect-free cutting edges. This leads to a significantly higher module power gain and reduced module power degradation. The innovative water-cooling process enables a faster temperature take-out than any other processes. Thus, leading to the best results on silicon layers and further temperature-sensitive coatings or depositions, e.g. on HJT cells.

The main benefits of using TLS™ for your cell/module production are:

- Additional module power output
- Exceptional mechanical strength of cut cells
- Avoidance of microcracks
- Reduced module power degradation
- Ability to passivate cutting edge
- Low cost of ownership

microCELL™ TLS - SYSTEM CONFIGURATION

Suitable for wafers with	• Wafer sizes: M2 - M12/G12 • Wafer thickness: 0.1 to 0.25 mm • Wafer material: silicon • Cell technology: all common technologies, e.g. PERC, TOPCon, HJT, IBC & tandem cells
Throughput	• Up to 6,000 wph
Cleavage pattern	• Half-cells
Laser processing	• TLS™-Technology (Thermal Laser Separation) • On-the-fly contactless cleaving process • Non-destructive particle-free cutting
Active alignment	• Wafer alignment via sensor system
Loading/unloading	• Available as stand-alone or inline integrated system

Rev. 2022-05 Changes in accordance to technical progress are reserved.

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